



STORMWATER
ENTERPRISE

POLICY CLARIFICATION

SUBJECT: DRAIN TIMES FOR FULL SPECTRUM DETENTION

DATE: SEPTEMBER 8, 2020

OVERVIEW:

When implementing full spectrum detention, adjustments to WQCV drain times are needed. This policy clarification describes the appropriate drain times to use under different circumstances within the City of Colorado Springs.

DETAILS:

Full spectrum detention is intended to mimic historic flow rate releases for developed sites. The City's drainage criteria manual references drain rates multiple times in various locations. When implementing full spectrum detention with an outlet structure, the drain times for 100-yr and EURV stages should dictate the design. The minimum drain time for the EURV is provided below.

Drainage Criteria Manual Volume 1, Chapter 13, Section 4.2.2 EURV Release Rate:

The EURV is intended to fully drain within a 72-hour period after the end of the storm. This is accomplished by a control plate placed in the outlet structure with the appropriate orifice (hole) sizes and spacing similar to those used for the release of the WQCV, see Volume 2 of this Manual.

Draining the EURV significantly faster than 72 hours would lead to increased runoff rates, which would not mimic historic flow rates. This document is intended to provide clear drain times for use with full spectrum detention design within the City of Colorado Springs.

POLICY:

When implementing full spectrum detention with an outlet structure, the EURV drain time should dictate the design to mimic historic runoff rates. The EURV must drain in 68-72 hours.

While faster drain times are available in criteria for the WQCV when water quality treatment is provided alone, shortening drain times when implementing full spectrum detention would result in increased runoff rates, which would not mimic historic flow rates. The WQCV drain time must be raised to around 40 hours to allow the EURV drain time to meet the 68-72 requirement. The WQCV drain time for extended detention basins remains a minimum of 40 hours, while the WQCV drain time for a full spectrum sand filter and other reduced WQCV drain time facilities may be around 38 hours if the EURV is designed to drain in the 68-72 hour range.

When full infiltration is used, minimum drain times are not applicable. Full infiltration permanent control measures must be designed to drain fast enough to meet the required drain times for Colorado water rights. Because full infiltration permanent control measures tend to drain slower than the original designed drain rates, a safety factor of 2 is applied for the EURV and WQCV drain rates. The EURV

must be designed to drain in a maximum of 36 hours, and the WQCV must be designed to drain in a maximum of 20 hours.

Because the volume for the EURV contains the volume for the WQCV, the stages can not be separated. Either the EURV (including the WQCV) must drain through an outlet structure or the EURV (including the WQCV) must be fully infiltrated.